Introduction

1. In July 1989, following consultation, the Government announced new arrangements in Scotland for controlling inputs to water of substances which are particularly toxic, persistent or bio-accumulative. The Government also announced details of a selection scheme for identifying the substances to be subject to these control procedures: and published the first list of prescribed substances known as the Red List.

2. Regulations to implement the Environmental Protection Act 1990, which come into force in Scotland on 1 April next year, will establish control procedures for minimising inputs of Red List substances from prescribed processes to the aquatic environment. There will be general requirements: (1) that industry should employ best available techniques not entailing excessive cost to minimise inputs of Red List substances to water; and (2) that any inputs should allow the receiving water to meet the environmental quality standards (EQSs) for these substances.

3. Of the 23 Red List substances, 12 are also EC List I substances and are already the subject of EC Directives setting environmental quality objectives (EQOs). This paper sets out proposals for national EQSs for eight further Red List substances, namely: **dichlorvos**; **atrazine**; **simazine**; **trifluralin**; **fenitrothion**; **azinphos-methyl**; **malathion**, and **endosulphan**. Two others, the **triorganotin compounds**, are the subject of an EQS recommendation by the Water Research Centre, which will be confirmed shortly for application in Scotland. The one remaining substance, **polychlorinated biphenyls**, is banned and it is not proposed to set standards. These proposals are in line with our EC obligations in Directive 76/464/EEC to set national standards for List II substances pending adoption of an appropriate Directive. The EQSs proposed are provisional as full investigation of their ecotoxicology and environmental data has not yet been possible. However, in view of the risk to the water environment posed by these substances, it is important to set standards now rather than wait for the results of further studies.

4. Thus, taken with existing arrangements, the proposals in this consultation paper mean that all of the Red List substances will be covered either by an EQO set in an EC Directive, or by a national EQS.

The Proposed Standards

5. The proposed EQSs are based on assessments carried out by the Water Research Centre (WRc). Summaries of the WRc assessments and its recommendations are included in the attached annexes. Copies of the full reports are available from WRc.

6. Proposed EQSs for individual substances, together with basic background information, are set out in annexes C to I. These proposals take account of available information on the intrinsic characteristics of the substances, and particularly their toxicity, persistence and bio-accumulative capacity, but it is impossible to set standard safety factors for the substances because of the variable quality and quantity of ecotoxicological data.

7. Where environmental concentrations cannot be measured at levels below one-tenth of the EQSs adopted, the standard will be applied by estimation or modelling the effects of any known discharge.

8. These proposals are standards for the protection of aquatic life. Therefore they are not necessarily related to the standards required for potable supplies of water, which must comply (at source) with the Surface Water Abstraction Directive, and (at time of supply) with the Drinking Water Directive.

Implementation

9. Implementation of the additional EQSs proposed in this paper, once adopted, will be by the insertion of additional water quality objectives (WQOs), through an amendment of the Surface Waters (Dangerous Substances) (Classification) (Scotland) Regulations 1990, and by direction to the River Purification Authorities (RPAs) to implement the new EQSs.

10. At the same time the opportunity is being taken to amend these Regulations in respect of other Red List, and List I and List II substances for which standards have been set, either in recent EC Directives or in earlier advice in the UK, but not yet incorporated in Regulations (see Annex A). Details of all the substances to be covered in this way are set out at Annex B.

Responses to Consultation

11. This paper is being circulated to those organisations listed in Annex J. Views and observations should be sent to Mr G Scullion, Scottish Office Environment Department, Water Policy Division, Room 220A, 27 Perth Street, Edinburgh EH3 5RB by 10 January 1992.

Scottish Office Environment Department
Water Policy Division
27 November 1991

ANNEX A

RED LIST SUBSTANCES

CURRENT STATUS IN RESPECT OF ENVIRONMENTAL QUALITY STANDARDS

Substances with EQOs set in EC Directives and corresponding EQSs set in the Surface Waters (Dangerous Substances)(Classification) (Scotland) Regulations 1990

1. Mercury and its compounds
2. Cadmium and its compounds
3. Gamma-Hexachlorocyclohexane
4. DDT
5. Pentachlorophenol and its compounds
6. Hexachlorobenzene
7. Hexachlorobutadiene
8. Aldrin
9. Dieldrin
10. Endrin

Substances with EQOs set in Directive 90/415/EEC but no corresponding EQSs set in Regulations

11. 1,2-Dichloroethane
12. Trichlorobenzene

Substances for which EQSs are proposed in this paper

13. Dichlorvos
14. Atrazine
15. Simazine
16. Trifluralin
17. Fenitrothion
18. Azinphos-methyl
19. Malathion
20. Endosulphan

Substances for which EQSs will be confirmed shortly (these will be the same as standards agreed already for England and Wales) but for which no corresponding EQSs have been set in Regulations

21. Tributyltin compounds
22. Triphenyltin compounds

Substance for which no EQS is proposed

23. Polychlorinated biphenyls

ANNEX B

PROPOSED ENVIRONMENTAL QUALITY STANDARDS TO BE ADDED TO THE DANGEROUS SUBSTANCES (SURFACE WATERS) (CLASSIFICATION) (SCOTLAND) REGULATIONS 1990

(a) Substances for which EQSs are proposed in this paper

Substance			Concentration in microgrammes per litre (annual mean)
Atrazine	(14)		2 (combined atrazine and simazine)
Azinphos-methyl	(18)		0.01
Dichlorvos	(13)	(i) (ii)	0.001 in fresh waters 0.04 in salt waters
Endosulphan	(20)		0.003
Fenitrothion	(17)		0.01
Malathion	(19)	(i) (ii)	0.01 in fresh waters 0.02 in salt waters
Simazine	(15)		2 (combined simazine and atrazine)
Trifluralin	(16)		0.1

(b) Substances with EQSs set in Directive 90/415/EEC

Substance	Concentration in microgrammes per litre (annual mean)
1,2-Dichloroethane (11)	10
Trichlorobenzene (12)	0.4
Trichloroethylene	10
Perchloroethylene	10

Numbers in brackets: Red List substances set out at Annex A

(c) Substances for which EQSs have already been agreed and published in SOEnD (formerly SDD) Circular 34/1985: Lead; Chromium; Zinc; Copper; Nickel; and Arsenic. A revised list of EQSs is to be confirmed soon for these substances and this will also include standards for Tributyltin, Triphenyltin, Boron, Iron, pH, Vanadium, PCSDs, Cyfluthrin, Sulcofuron, Flucofuron and Permethrin. These will be the same as standards agreed already for England and Wales (DOE Circular 7/89 refers). The new/revised EQSs will be as follows:

Substance	Total hardness (as mg/l $CaCO_3$)	Concentration in microgrammes per litre (annual average, unless indicated)		
		Fresh waters		Salt waters
		Sensitive life	Other life	
Tributyltin (21)		0.02MAC	0.02MAC	0.002MAC
Triphenyltin (22)		0.02MAC	0.02MAC	0.008MAC
Lead	0-50	4	50	25
	50-100	10	125	
	100-150	10	125	
	150-200	20	250	
	200-250	20	250	
	250+	20	250	
Chromium	0-50	5	150	15
	50-100	10	175	
	100-150	20	200	
	150-200	20	200	
	200-250	50	250	
	250+	50	250	
Zinc	0-50	8	75	40
	50-100	50	175	
	100-150	75	250	
	150-200	75	250	
	200-250	75	250	
	250+	125	500	
Copper	0-50	1	1	25
	50-100	6	6	
	100-150	10	10	
	150-200	10	10	
	200-250	10	10	
	250+	28	28	
Nickel	0-50	50	50	15
	50-100	100	100	
	100-150	150	150	
	150-200	150	150	
	200-250	200	200	
	250+	200	200	

Substance	Total hardness (as mg/1 $CaCO_3$)	Concentration in microgrammes per litre (annual average, unless indicated)		
		Fresh waters		**Salt waters**
		Sensitive life	Other life	
Arsenic	0-50	50	50	40
	50-100	50	50	
	100-150	50	50	
	150-200	50	50	
	200-250	50	50	
	250+	50	50	
Boron		2000	2000	7000
Iron		1000	1000	1000
pH		6.0-9.0	6.0-9.0	6.0-8.5
Vanadium	0-200	20	20	100
	200+	60	60	
PCSDs		0.05T	0.05T	0.05T
Cyfluthrin		0.001T	0.001T	0.001T
Sulcofuron		25T	25T	25T
Flucofuron		1T	1T	1T
Permethrin		0.01T	0.01T	0.01T

MAC = Maximum allowable concentration
T = Total

Numbers in brackets: Red List substances set out at Annex A

ANNEX C

PROPOSED EQS FOR ATRAZINE AND SIMAZINE

1. Atrazine and simazine are widely used as herbicides for both agricultural and non-agricultural applications. They are persistent in the aquatic environment with half lives typically estimated in months, but do not tend to bioaccumulate.

2. Proposed standards in water (ug/l)

	Fresh	Saline
Annual averages	The sum of the concentrations of both substances taken together shall not exceed 2µg/l annual average, or 10µg/l MAC.	
MAC		

3. The Department has adopted the WRc recommendation for these proposed standards.

Summary of WRc conclusions

4. Results from comparable tests with atrazine and simazine suggest that the two herbicides have similar toxicities. Aquatic organisms vary in their sensitivity to these compounds. Algae and plants are particularly sensitive, but animals can be affected by the same concentrations through secondary effects such as loss of habitat, loss of food and changes in water quality. Although there is no experimental evidence it is considered very likely that the toxic effects of atrazine and simazine are additive because they share a common toxic action.

5. The EQS values are given in the table. For the protection of freshwater life an EQS of 2 ug/l for combined atrazine and simazine is proposed, expressed as an annual average value. This is derived by applying an arbitrary safety factor of 10 to concentrations around 19 to 20 ug/l atrazine which were found to have adverse effects on communities in lakes, ponds and streams. A maximum allowable concentration of 10 ug/l for combined atrazine and simazine is also proposed, based on the field data which showed a highest no observed effects concentration (HNOEC) of 10 ug/l atrazine obtained for benthic micro-communities in the laboratory, and temporary adverse effects caused by 10 ug/l atrazine in pond enclosures.

6. For the protection of saltwater life an EQS of 2 ug/l for combined atrazine and simazine expressed as an annual average value is also proposed. This was derived by applying an arbitrary safety factor of about 10 to concentrations of 10 to 15 ug/l atrazine which had adverse effects on various species of algae, 'seaweeds' and plants in both acute (ie, quick effect) and chronic (ie, exposed for a long period of time) laboratory tests and the indication that freshwater and marine species have similar sensitivities. A maximum allowable concentration of 10 ug/l is also proposed, based on the evidence of significant chronic effects observed in autotrophs exposed in the laboratory to 10 to 15 ug/l atrazine as well as on the apparent similar sensitivities as freshwater species.

7. All the proposed standards refer to dissolved atrazine and simazine. Although they are based mainly on data for atrazine the standards are proposed for combined atrazine and simazine because indications are that the two herbicides are equally toxic and that their toxic effects are most likely additive. The UK standard analytical method for triazines (DOE 1985) is adequate for monitoring the proposed standards.

ANNEX D

PROPOSED EQS FOR AZINPHOS-METHYL

1. Azinphos-methyl is a broad spectrum organophosphorous insecticide entering the aquatic environment mainly from diffuse sources. It is not very persistent in natural waters.

2. **Proposed standards in water (ug/l)**

	Fresh	Saline
Annual average	0.01	0.01
MAC	0.04	0.04

3. The Department has adopted the WRc recommendation for these proposed standards.

Summary of WRc conclusions

4. For the protection of freshwater life a EQS of 0.01 ug/l is proposed based on applying a safety factor of 10 to the no effect concentration of 0.1 ug/l for Daphnia magna. The safety factor takes into account that in acute tests other species were more sensitive than Daphnia. The same EQS is proposed for the protection of marine life as insufficient data are available to derive a separate standard and the available data indicate that fresh and marine species have the same sensitivity to azinphos-methyl. The EQS should be expressed as annual average concentrations, because they are based on chronic data, and as 'dissolved' azinphos-methyl. As the highest azinphos-methyl levels in the environment are likely to be associated with run-off from treated land, an EQS of 0.04 ug/l is also proposed as maximum 'dissolved' azinphos-methyl concentration to protect against these episodic events. This EQS is based on the 24-hour LC50 of 0.44 ug/l to the amphipod, Gammarus fasciatus, taking into account the relatively low persistence of azinphos-methyl. Insufficient environmental data are available to verify the proposed standards for the protection of aquatic life.

5. The analytical limits of detection for azinphos-methyl which can currently be achieved by the water industry (approximately 0.05 ug/l in river waters, Standing Committee of Analysts 1988) are inadequate for monitoring the EQS in natural waters.

ANNEX E

PROPOSED EQS FOR DICHLORVOS

1. Dichlorvos is an organophosphorous contact and stomach-acting insecticide. It may enter the aquatic environment by land run-off and spray drift, by direct application, and point discharges. It is not very persistent with a half-life of a few days.

2. **Proposed standards in water (ug/l)**

	Fresh	Saline
Annual average	0.001	0.04
MAC (outside of the defined mixing zone)		
after 24 hours	-	0.6
after 1 hour	-	25
before next application	-	6

3. The Department has adopted the WRc recommendation for these proposed standards.

4. The Veterinary Medicines Directorate support the Department's proposals.

Summary of WRC conclusions

5. For the protection of freshwater life an EQS of 0.001 ug/l is proposed based on applying an arbitrary safety factor of approximately 100 to the lowest acute 48-hour LC50 of 0.07 ug/l for Daphnia pulex and the 96-hour LC50 of 0.1 ug/l for stonefly naiads. These laboratory tests were conducted under static conditions without analysis of toxicant concentrations and the EQS must, therefore, be regarded as tentative until more relevant data are available. For the protection of marine life an EQS of 0.04 ug/l is proposed, based on the application of a safety factor of 100 to the acute 96-hour LC50 of 4 ug/l for the sand shrimp. Both these EQS should be expressed as annual average concentrations because of the large margin of safety between acutely toxic levels and the EQS. These values apply outside a defined mixing zone.

6. In addition, if dichlorvos is applied directly to the marine environment (ie in salmon farms), it is suggested that 24 hours after its release the maximum concentration outside a defined mixing zone should not exceed 0.6 ug/l. This is arrived at by applying an arbitrary safety factor of 5 (because of the relatively low persistence of dichlorvos) to the 24-hour maximum allowable toxicant concentration (MATC) of 3.2 ug/l for lobster larval acetyl choline esterance activity inhibition, calculated from the no observed effect concentration (NOEC) and lowest observed effect concentration (LOEC) values of 1 and 10 ug/l respectively. Furthermore, the concentrations one hour after the release outside the defined mixing zone should not exceed 25 ug/l, a concentration which did not result in mortalities or cumulative effects in lobster larvae exposed for repeated 6-hour periods; the concentration must decrease to below 6 ug/l, the 12-hour NOEC for lobster larvae, before the next release of dichlorvos takes place. However, in some situations it may not be possible to monitor the

short-term standards. In these circumstances only the maximum concentration of 0.6 ug/l after 24 hours will be applicable. These standards are summarised in the table.

7. Insufficient environmental data are available to verify the proposed standards for the protection of aquatic life.

8. The analytical limits of detection which can currently be achieved by the water industry for dichlorvos (eg, approximately 0.04 ug/l in river water, Standing Committee of Analysts 1988) are inadequate for monitoring the proposed annual average EQS for the protection of fresh and marine waters.

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ANNEX F

PROPOSED EQS FOR ENDOSULPHAN

1. Endosulphan is a broad spectrum non-systemic contact and stomach acting insecticide very toxic to fish and most aquatic organisms. Entry into the environment is from diffuse sources via spray drift, run off, or point discharges.

2. **Proposed standards in water (ug/l)**

	Fresh	Saline
Annual Average	0.003	0.003
MAC	0.3	-

3. The Department has adopted the WRc recommendation for these proposed standards.

Summary of WRc conclusions

4. For the protection of freshwater life an EQS of 0.003 ug/l is proposed based on applying an arbitrary safety factor of 100 to the acute LC50 of 0.3 ug/l for rainbow trout. Tests have shown that fathead minnow, juvenile fish (7-day LC50 of 0.86 ug/l) and early life stages (NOEC of 0.2 ug/l for full life cycle tests) have similar sensitivities to endosulphan. The standard of 0.003 ug/l is expressed as annual average concentration and as 'total dissolved endosulphan', which is defined as the sum of the concentrations of the two isomers plus the degradation product endosulphan sulphate and is measured after allowing the sample to settle for one hour before analysis of the supernatant. The standard is based on 'total dissolved endosulphan' because environmental data and field trials suggest that endosulphan tends to become adsorbed to suspended solids and that in this form it is not readily bioavailable to aquatic organisms and in particular to fish.

5. In addition to protect against episodic pollution an EQS of 0.3 ug/l for 'total dissolved endosulphan' expressed as maximum concentration is also proposed. This is based on applying an arbitrary safety factor of 100 to the short-term LC50 of 31.9 ug/l obtained for fathead minnow and a factor of 10 to the 24-hour LC50 of 3.2 ug/l for rainbow trout.

6. Insufficient data are available to set a standard for total (dissolved and adsorbed) endosulphan.

7. For the protection of saltwater life an EQS of 0.003 ug/l for 'total dissolved endosulphan' expressed as annual average concentration is proposed on the basis that freshwater and saltwater species appear to have similar sensitivities to endosulphan. No maximum EQS value is proposed for total or 'total dissolved endosulphan' for the protection of saltwater life.

8. The analytical limits of detection for endosulphan currently achievable within the water industry (approximately 0.01 ug/l in river waters, Standing Committee of Analysts 1988) are inadequate for monitoring the proposed EQS in natural waters.

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ANNEX G

PROPOSED EQS FOR FENITROTHION

1. Fenitrothion is a contact acting insect pesticide which disrupts the nervous system. It has a wide range of applications for fruit and cereal protection, insect control (including malarial vectors and locusts) and protection of conifer plantations. It is not very persistent in the aquatic environment with a typical half life of 1 to 10 days, but has a moderate tendency to accumulate in aquatic organisms.

2. **Proposed standards in water (ug/l)**

	Fresh	Saline
Annual Average	0.01	0.01
MAC	0.25	0.25

3. The Department has adopted the WRc recommendation for these proposed standards.

Summary of WRC conclusions

4. An EQS of 0.01 ug/l is proposed for the protection of freshwater life, derived by applying an arbitrary safety factor of about 100 to acute LC50s of around 1 ug/l reported for certain crustaceans in laboratory tests. This EQS should be expressed as an annual average value. A provisional maximum acceptable concentration of 0.25 ug/l is also proposed, based on a no effect concentration of 1.3 ug/l for insect drift and allowing for the apparently five-fold higher sensitivity of certain crustaceans compared to the insects tested. The same provisional standards are proposed for the protection of saltwater life because the few available data suggest similar sensitivity to equivalent freshwater organisms. Because fenitrothion readily associates with suspended solids, samples should be allowed to settle for at least one hour before analysis, which should be carried out on the supernatant. These provisional standards may be revised should additional relevant field data become available.

ANNEX H

PROPOSED EQS FOR MALATHION

1. Malathion is a contact and stomach-acting organophosphorous pesticide which disrupts the nervous system, making it toxic to all innervated animals. Malathion is in widespread use against insect and other invertebrate pests.

2. **Proposed standards in water (ug/l)**

	Fresh	Saline
Annual Average	0.01	0.02
MAC	0.5	0.5

3. The Department has adopted the WRc recommendation for these proposed standards.

Summary of WRc conclusions

4. An EQS of 0.01 ug/l as an annual average is proposed for the protection of freshwater life, derived by applying an arbitrary safety factor of 100 to the acute LC50s of around 1 ug/l obtained for various invertebrates, in particular Daphnia and Gammarus. The EQS is supported by the available chronic toxicity data, in particular the 'no effect' concentration of 0.008 ug/l reported for Gammarus pseudolimnaeus. For the protection of saltwater life a slightly higher annual average EQS of 0.02 ug/l is proposed, based on the NOEC reported for the early life stages of the Dungeness crab and bearing in mind that other crustacean species may be more sensitive. These EQSs are proposed as annual averages because of the large safety margins between them and the acute toxicity data. Based on the acute toxic effects observed in certain freshwater crustaceans exposed to 0.5 ug/l malathion this concentration is tentatively suggested as a provisional maximum acceptable concentration for the protection of freshwater life. There are no comparable data for saltwater life, but in view of the apparently similar sensitivities of fresh and saltwater organisms the same provisional maximum acceptable concentration is suggested for salt waters.

5. Bioaccumulation data are limited but suggest only a low to moderate tendency to accumulate in aquatic organisms. In higher vertebrates metabolism and elimination is rapid.

6. This review of the available data for malathion suggests that the EQS values are adequate as guide values to protect freshwater and saltwater life. However, further information would be beneficial, particularly on the effects of malathion on one or more of the UK species of Gammarus (eg G. pulex or G. lacustris).

ANNEX I

PROPOSED EQS FOR TRIFLURALIN

1. Trifluralin is a herbicide used for weed control in crops. Entry into the aquatic environment is most likely to occur via industrial discharges, agricultural run-off and spray drift.

2. **Proposed standards in water (ug/l)**

	Fresh	Saline
Annual Average	0.1	0.1
MAC	20	20

3. The Department has adopted the WRc recommendation for these proposed standards.

Summary of WRc conclusions

4. For the protection of freshwater life an EQS of 0.1 ug/l, expressed as an annual average concentration of dissolved trifluralin, is proposed by applying a safety factor of 100 to the 96-hour LC50 of 10 ug/l for rainbow trout obtained in clean water in the absence of suspended solids. In order to protect the aquatic environment from episodic inputs of high trifluralin concentration, a maximum concentration for dissolved trifluralin of 1 ug/l is also proposed for freshwaters based on applying a safety factor of 10 to the 960-hour LC50 of 10 ug/l for rainbow trout to prevent short-term acute effects. In addition an EQS of 20 ug/l for total trifluralin expressed as a maximum concentration is proposed by applying a safety factor of approximately 100 (a factor of 10 to protect against acute effects and an additional factor of 10 to take into account the higher sensitivity of other species) to the acute 96-hour LC50 of 2800 ug/l obtained for bluegill in the presence of suspended solids.

5. For the protection of marine life an EQS of 0.1 ug/l, expressed as dissolved trifluralin and as an annual average concentration, is proposed by applying a safety factor of 10 to the MATC obtained in a chronic test for sheepshead minnow. The safety factor makes allowance that other species may be more sensitive. No maximum EQS is proposed for dissolved trifluralin as the inputs to marine waters are predominantly via rivers which undergo high dilution in estuarine and coastal areas and are therefore unlikely to be significantly effected by episodic events. In the absence of data on the bioavailability of trifluralin adsorbed in marine sediment it is proposed that the same EQS of 20 ug/l for total trifluralin expressed as maximum concentration suggested for the protection of freshwater life should also be applied for the protection of marine life.

6. The analytical limits of detection which can currently be achieved by the water industry for trifluralin (approximately 0.01 ug/l in river water, Standing Committee of Analysts 1988) are adequate for monitoring the proposed EQS in natural waters. For the determination of dissolved trifluralin the sample should be allowed to settle for one hour and the supernatant should be analysed without filtration.

ANNEX J

LIST OF CONSULTEES

Anglers Co-operative Association
Association of Directors and River Inspectors of Scotland
Association of Scottish Chambers of Commerce
Association of Scottish District Salmon Fishery Boards
Atlantic Salmon Trust
British Petroleum Grangemouth
Central Scotland Water Development Board
Chemical Industries Association
Clyde River Purification Board
Confederation of British Industry (Scotland)
Convention of Scottish Local Authorities
Countryside Commission for Scotland
Crofters Commission
Crop Protection Unit, East of Scotland Agricultural Unit
Forth River Purification Board
Friends of the Earth (Scotland)
Highlands & Islands Development Board
Highland River Purification Board
Imperial Chemical Industries
Institute of Water & Environmental Management
Law Society of Scotland
Malt Distillers' Association of Scotland
National Farmers' Union of Scotland
National Federation of Self Employed and Small Businesses Ltd
Nature Conservancy Council for Scotland
North-East River Purification Board
Orkney Islands Council
River Leven Trust
River Tweed Commissioners
Royal Environmental Health Institute of Scotland
Royal Society for the Protection of Birds
Salmon and Trout Association
Scotch Whisky Association
Scottish Agricultural College
Scottish Anglers National Association
Scottish Association of Directors of Water and Sewerage Services
Scottish Crofters Union
Scottish Enterprise
Scottish Fishermen's Federation
Scottish Landowners' Federation
Scottish River Purification Boards' Association
Scottish Salmon Growers' Association
Scottish Shellfish Growers' Association
Scottish Trades Union Congress
Scottish Wildlife Trust
Sheltand Farmers' Association
Shetland Islands Council
Shetland Salmon Farmers' Association
Solway River Purification Board
Tay River Purification Board
Tweed River Purification Board
Western Isles Islands Council